

Jason R. Swallen

ICHNANTHUS FIRMUS Swallen, sp. nov.

Culmi 1.7 m. longi; vaginae internodiis multo longiores, papilloso-pilosae; laminae 15 cm. longae, 1.4-1.8 cm. latae, papilloso-pilosae, marginibus scabris; panícula 37 cm. longa, ramosis adscendentibus vel appressis usque ad 13 cm. longis; spiculae 4.5-6.5 mm. longae, brevipedicellatae; gluma prima acuminata; gluma secunda lemmate sterili longior vel brevior, 5-nervis, scabra, marginibus longe pilosa; fructus 3.2 mm. longus, alis latis 0.7 mm. longis.

Perennial; culms straggling, 1.7 m. long, papillose-pilose below the nodes; internodes mostly short, the sheaths much overlapping, keeled, papillose-pilose; blades up to 15 cm. long, 1.4-1.8 cm. wide, papillose-pilose-hispid on both surfaces, densely so just above the ligule, with white very scabrous margins; inflorescence 37 cm. long with narrowly ascending branches as much as 13 cm. long, the lower ones rather distant, the axis and branches papillose-pilose with long spreading hairs; spikelets 4.5-6.5 mm. long, short-pedicellate, appressed to the branches; first glume acuminate or awn-pointed, from shorter than the second glume and sterile lemma to exceeding them as much as 1.5 mm., 5-nerved, scabrous, sparingly covered, especially on the margins, with long papillose-based hairs; second glume and sterile lemma equal or subequal, 5-nerved, the glume acute, scabrous, hairy toward the tip, the lemma scarcely scabrous with only a few hairs at the summit; fruit 3.2 mm. long, yellowish, with broad obtuse wings 0.7 mm. long.

Type in the Herbarium Bradeanum, No. 25504, collected at Manaus, Amazonas, Brazil, January 26, 1963, by E. Santos 1499 et al. A piece of the type is in the U. S. National Herbarium.

ICHNANTHUS RECLIVIS Swallen, sp. nov.

Culmi ramosi glabri 1.2 m. alti; vaginae internodiis breviores, eae ramorum pilosae vel papilloso-pilosae; laminae usque ad 12 cm. longae, 2 cm. latae, glabrae; panícula 17 cm. longa, ca. 5 cm. lata, ramis adscendentibus infimis 7 cm. longis; spiculae 4-4.2 mm. longae, appressae, brevipedicellatae; gluma prima spicula 1/5 brevior, 3-nervis, scabra, pilis paucis ca. 4 mm. longis; fructus 3 mm. longus alis 1 mm. longis.

Perennial; culms erect at the woody base, arching, branching, glabrous, up to 1.2 m. tall; sheaths, at least the lower ones, shorter than the internodes, glabrous, those of the branches pilose or papillose-pilose with long hairs, with a very densely pubescent collar; blades as much as 12 cm. long, 2 cm. wide, glabrous, or the younger ones of the branches pubescent toward the base; panicle 17 cm. long, about 5 cm.

wide, with narrowly ascending branches, the lower ones 7 cm. long; spikelets short-pedicellate, appressed, 4-4.2 mm. long; first glume $\frac{4}{5}$ as long to as long as the spikelet, 3-nerved, scabrous, especially on the nerves, with a few papillose hairs about 4 mm. long; second glume and sterile lemma equal, acute, 5-nerved, more or less scabrous; fruit 3 mm. long, yellowish, the wings 1 mm. long.

Type in the U. S. National Herbarium, No. 1500428, collected on cindery rocks among brush, between Bonito and Rondonopolis, Matto Grosso, Brazil, April 8, 1930, by Agnes Chase (No. 11894).

ICHNANTHUS SUBINCLUSUS Swallen, sp. nov.

Culmi basi duri, lignei, ramosi, infra nodis papilloso vel papilloso-pilosi; vaginae internodiis longiores, papilloso-pilosae pilis ca. 5 mm. longis; laminae 7-10 cm. longae, 1-1.7 cm. latae, anguste ovato-lanceolatae, infra dense pubescentes supra scabrae, pilis longis dispersis; panicula 20 cm. longa, 3-4 cm. lata, densa, ramis adscendentibus vel appressis; spiculae 5-5.5 mm. longae, brevipedicellatae, appressae; gluma prima spicula $\frac{1}{5}$ brevior vel spiculam aequans, 3-nervis, scabra; fructus 3.6-3.7 mm. longus alis 0.6 mm. longis.

Perennial; culms hard and woody near the base, branching at the middle node, with several (6-10) internodes of roughly equal length, papillose or papillose-pilose at least below the nodes; sheaths longer than the internodes, papillose-pilose with spreading hairs about 5 mm. long; blades 7-10 cm. long, 1-1.7 cm. wide, narrowly ovate-lanceolate, densely and softly pubescent on the under surface, finely scabrous on the upper, often with long scattered hairs, especially near the base, the margins finely scabrous; panicle rather densely flowered about 20 cm. long, 3-4 cm. wide, partly enclosed in the uppermost sheath, the branches narrowly ascending or appressed; spikelets 5-5.5 mm. long, appressed, short-pedicellate; first glume $\frac{4}{5}$ as long to as long as the spikelet, 3-nerved, scabrous, especially on the nerves; second glume and sterile lemma subequal, 5-nerved, the glume acute, the lemma rounded or blunt, enclosing a well developed palea as long as the lemma, densely pubescent at the tip; fruit 3.6-3.7 mm. long, with small wings 0.6 mm. long.

Type in the U. S. National Herbarium, No. 2382897, collected in cerrado, Campo Mourão, Paraná, Brazil, 625 meters, February 3, 1962, by G. Hatschbach (No. 8851).

ICHNANTHUS PUBESCENS Swallen, sp. nov.

Culmi erecti vel decumbentes ca. 65 cm. alti, nodis breve barbatis et internodiis pilosis; vaginae dense pilosae; laminae 6-7 cm. longae, 8-12 mm. latae, infra dense pubescentes supra glabrae basi pilis longis praeditae; panicula 17 cm. longa, 5-6 cm. lata, ramis solitariis usque ad 6 cm. longis; spiculae 4.8 mm. longae, appressae; gluma prima spicula $\frac{1}{5}$ brevior vel paulum longior, acuta vel acuminata; fructus 3.3 mm. longus alis 0.7-0.8 mm. longis.

Perennial; culms erect or decumbent at the base, about 65 cm. tall, with shortly bearded nodes, the internodes appressed-pilose, especially below the nodes; sheaths nearly as long as the internodes, densely pilose, the hairs becoming longer toward the summit of the sheath; blades 6-7 cm. long, 8-12 mm. wide, acuminate, spreading, densely pubescent beneath, nearly glabrous above, with a few long hairs at the base; panicle long-exserted, 17 cm. long, 5-6 cm. wide, with solitary ascending finely scabrous branches, the lowermost 6 cm. long; spikelets 4.8 mm. long, appressed; first glume $\frac{4}{5}$ as long to slightly longer than the spikelet, acute or acuminate, 3-nerved, scabrous on the keel; second glume and sterile lemma subequal, 5-nerved, the glume acute, the lemma blunt or rounded; fruit 3.3 mm. long, the wings 0.7-0.8 mm. long.

Type in the U. S. National Herbarium, No. 2304289, collected in campo cerrado, Fda. Morungava, Rio do Funil, Paraná, Brazil, December 12, 1958, by G. Hatschbach and R. B. Lange (No. 5276).

This species is obviously related to I. subinclusus Swallen, which has a larger and denser panicle partly enclosed in the sheath, erect or narrowly ascending panicle branches, and larger spikelets to 5.5 mm. long.

ICHNANTHUS NERVOSUS Swallen, sp. nov.

Culmi erecti, 165 cm. alti, glabri; vaginae internodiis multo breviores; laminae 12-22 cm. longae, 2.2-3.3 cm. latae, marginibus pubescentes vel plus minusve scabrae; paniculae 42 cm. longae ramis patentibus ad basin floriferis, infimo remoto usque ad 16 cm. longo; spiculae 4.5 mm. longae, appressae, nervosae; gluma prima spicula $\frac{1}{3}$ - $\frac{1}{2}$ brevior, 3-nervis; lemma sterile cucullatum; fructus 3.6 mm. longus, alis cicatricibus reductis.

Perennial; culms erect, 165 cm. high, glabrous or somewhat pubescent at the nodes; sheaths much shorter than the internodes, glabrous, densely pubescent in the throat; blades 15-22 cm. long, 2.2-3.3 cm. wide, somewhat narrowed toward the base, pubescent along the glabrous or somewhat scabrous white margins; panicle 42 cm. long, the branches spreading, floriferous to the base, the lowermost remote, 16 cm. long, very densely scabrous; spikelets 4.5 mm. long, appressed to the branches, strongly nerved; first glume $\frac{1}{2}$ - $\frac{2}{3}$ as long as the spikelet, 3-nerved, scabrous near the tip; second glume and sterile lemma equal, 5-nerved, the glume acute, the sterile lemma cucullate, scabrous near the tip, otherwise glabrous; fruit 3.6 mm. long, yellowish, the wings reduced to scars.

Type in the U. S. National Herbarium, No. 1645512, collected in a wood at Tapera, Pernambuco, Brazil, April 24, 1935, by D. Bento J. Pickel (No. 3855).

ICHNANTHUS GLABERRIMUS Swallen, sp. nov.

Culmi erecti, glabri, 60 cm. alti; ligula obsoleta; laminae ca. 16-22 cm. longae, 1.8-2 cm. latae, glabrae; panicula erecta, 25 cm. longa, 2 cm. lata, spiculis appressis; spiculae

4 mm. longae, purpureae, glabrae; gluma prima spicula $1/3$ brevior, vel illum aequans; fructus 3.4 mm. longus, albus, alis latis 1.5 mm. longis.

Perennial; culms erect, 60 cm. tall, glabrous; leaves with no differentiation between sheath and blade, the blade about 16-22 cm. long, 1.8-2 cm. wide, acuminate, narrowed toward the base, glabrous, even the white margins; ligule wanting; panicle erect, 25 cm. long, about 2 cm. wide (possibly wider in mature panicles), with appressed branchlets; spikelets 4 mm. long, green, tinged with violet, glabrous or slightly scabrous; first glume $2/3$ as long to nearly as long as the spikelet; second glume and sterile lemma equal, the glume acute, the lemma rounded; fruit 3.4 mm. long, white, the wings broad, 1.5 mm. long.

Type in the U. S. National Herbarium, No. 2382261, collected in Jalca Zone, 3 km. south of Pornacocha, east of Shipasbamba trail, Peru, 2400 m. altitude, June 20, 1962, by J. J. Wurdack (No. 1001).

Ichnanthus glaberrimus is related to *I. duidensis* Swallen, but in that species the spikelets are 5 mm. long, with a few long scattered hairs, and the leaves have a definite ligule between sheath and blade.

ICHNANTHUS LONGISPICULUS Swallen, sp. nov.

Culmi plus 60 cm. longi; vaginae internodiis breviores, glabrae, in collo dense villosae; laminae 11-18 cm. longae, 1.6-2.6 cm. latae, ad basin longe-villosae; panicula 25 cm. longa ramis solitariis, infimis usque ad 15 cm. longis; spiculae 6-6.5 mm. longae, glabrae; gluma prima acuminata, 3.5-4.5 mm. longa; fructus 3.5 mm. longus alis firmis 1 mm. longis.

Perennial?; culms more than 60 cm., perhaps more than 1 m. long; sheaths shorter than the internodes, glabrous with a densely villous collar; blades flat, somewhat asymmetrical, 11-18 cm. long, 1.6-2.6 cm. wide, narrowed toward the base, but not petiole-like, long-villous on the upper surface at the base, the white margins finely scabrous, otherwise glabrous; panicle about 25 cm. long with solitary or paired ascending to spreading branches, the lower as much as 15 cm. long with short ascending few-flowered branchlets; spikelets mostly in pairs, appressed, 6-6.5 mm. long, glabrous; first glume acuminate, 3.5-4.5 mm. long, 3-nerved; second glume and sterile lemma acuminate, or the sterile lemma somewhat blunt, 5-nerved; fruit 3.5 mm. long, yellowish, with firm wings 1 mm. long.

Type in the U. S. National Herbarium, No. 1447332, collected in forest at Tapera, Pernambuco, Brazil, February 16, 1930, by D. Bento J. Pickel (No. 2267). Collected at Tapera, also by Pickel, Nos. 1361, 2207.

ICHNANTHUS CONGESTUS Swallen, sp. nov.

Culmi graciles, lignei, ramosi, 1-2 m. longi, 1-2 mm. crassi; vaginae internodiis longiores marginibus conspicue villosis; ligula usque ad 5 mm. longa; laminae 8-11 cm. longae,

0.8-1 cm. latae, glabrae vel plus minusve pubescentes; paniculae 5-6 cm. longae, 1-2 cm. latae, densae, axis et ramis dense villosis; spiculae 3.5-3.7 mm. longae, brevipedicellatae; gluma prima spicula $1/3-1/4$ brevior, pilis longis praedita; fructus 2.7-2.8 mm. longus alis 0.4 mm. longis.

Culms slender, woody, 1-2 mm. thick, branching, 1-2 m. long; sheaths longer than the internodes, conspicuously villous on the margins and across the back of the collar, the hairs soon falling off; ligule a prominent line of rather coarse hairs, as much as 5 mm. long; blades mostly 8-11 cm. long, 0.8-1 cm. wide (or the uppermost smaller), glabrous or somewhat pubescent, the margins finely scabrous; inflorescence 5-6 cm. long, 1-2 cm. wide with densely flowered branches as much as 3 cm. long, the axis and branches conspicuously villous; spikelets 3.5-3.7 mm. long, short-pedicellate; first glume acuminate, $2/3-3/4$ as long as the spikelet, 3-5-nerved, with long hairs near the tip or occasionally nearly to the base, the hairs shorter downward; second glume and sterile lemma subequal, 5-nerved, the glume with a few hairs near the tip, the sterile lemma glabrous or nearly so; fruit 2.7-2.8 mm. long, the wings small but plainly evident, 0.4 mm. long.

Type in the U. S. National Herbarium, No. 1963481, collected between shrubs of thicket, Campo de Congonhas, São Paulo, Brazil, October 23, 1948, by D. Bento J. Pickel (No. 5893).

ICHNANTHUS CAMPORUM Swallen, sp. nov.

Culmi erecti 110 cm. alti, dense pilosi vel subglabri; laminae firmae, 16-20 cm. longae, 6-9 mm. latae, pilosae, marginibus prominentibus scabris; paniculae 10-13 cm. longae, ramis 6-8 adscendentibus; spiculae 5-5.2 mm. longae, inflatae, glabrae; gluma prima acuta, 3-nervis, 3-3.5 mm. longa; fructus 3.2 mm. longus, acutus, albus, cicatricibus parvis inconspicuis.

Perennial; culms erect from short rhizomes, 110 cm. tall, rather densely pilose to nearly glabrous; sheaths longer or shorter than the internodes, pilose like the culms; blades stiff, firm, 16-20 cm. long, 6-9 mm. wide, pilose on both surfaces, with prominent white scabrous margins; panicle 10-13 cm. long, with 6-8 ascending branches each bearing a few pairs of rather distant spikelets; spikelets 5-5.2 mm. long, inflated, glabrous; first glume acute, 3-nerved, 3-3.5 mm. long; second glume and sterile lemma equal, 5-nerved, the nerves prominent; fruit 3.2 mm. long, elliptic, acute, white, smooth and shining; scars small and inconspicuous.

Type in the U. S. National Herbarium, No. 1448744, collected in low brush, sandy clay campo, between Viannapolis and Ponta Funda, Goias, Brazil, 1000 m. altitude, March 17, 1930, by Agnes Chase (No. 11274).

Additional material examined: Brazil: Goias: Pirineus, Macedo 4378; between Viannapolis and Ponta Funda, Chase 11336; Annapolis, Chase 11343. Some specimens show a relationship with Ichnanthus procurrans (Nees) Swallen, comb. nov. (Panicum procurrans Nees), in that the spikelets are hispid and/or the blades are shorter and relatively broader, but the spikelets

are 5-5.2 mm. long, and more or less hispid. In *I. procurrens* the spikelets are 3-3.5 mm. long. These specimens, which seem to be hybrids, are Chase 11384 and 11386, both collected near Annapolis.

ICHNANTHUS RECLINATUS Swallen, sp. nov.

Culmi decumbentes ramosi, internodiis 3-5 cm. longis sparse pilosis; vaginae internodios subaequans, dense papilloso-pilosae; laminae 4-8 cm. longae, 5-10 mm. latae, infra et supra dense pubescentes; paniculae 3.5-5 cm. longae ramis brevis dense villosis; spiculae 5 mm. longae, appressae; gluma prima acuta vel breviaristata spicula $1/4$ - $2/5$ brevior; fructus 3.5 mm. longus alis 0.6 mm. longis.

Culms more than 1 m. long, straggling, branching, hard and woody, about 1 mm. thick, with numerous internodes 3-5 cm. long, sparsely pilose at least below the nodes; sheaths usually about as long as the internodes, sometimes a little shorter, rather densely papillose-pilose; blades erect or ascending, 4-8 cm. long, 5-10 mm. wide, slightly ovate, softly pubescent on both surfaces; inflorescence 3.5-5 cm. long with a few short branches densely flowered to the base, the branches and pedicels densely villous; spikelets 5 mm. long, appressed; first glume acute, apiculate or short-awned, $3/5$ - $3/4$ as long as the spikelet, 5-(3-) nerved, sometimes bearing a few hairs along the margins; second glume and sterile lemma acute or rather blunt, 5-(7-) nerved, usually with a few hairs; fruit 3.5 mm. long, pale yellowish, with wings about 0.6 mm. long.

Type in the U. S. National Herbarium, No. 2380658, collected in pinhal, Alto Matador, Rio do Sul, Santa Catarina, Brazil, altitude 800 m., October 16, 1958, by R. Reitz and R. Klein (No. 7257). One other specimen was examined which can be referred to this species: Brazil: Rio de Janeiro: Nova Friburgo, Curran 635.

ICHNANTHUS RIPARIUS Swallen, sp. nov.

Culmi graciles, ramosi, decumbentes, plus 50 cm. longi, subglabri; vaginae glabrae; laminae 5-8 cm. longae, 5-8 mm. latae, glabrae, marginibus scabrae; panicula 3-6.5 cm. longa, ramis dense floriferis; spiculae 3 mm. longae brevipedicellatae; gluma prima acuta spiculam subaequans pilis paucis praedita; gluma secunda lemma sterile aequans, 5-nervia, apeci pilis praedita; fructus 2.5 mm. longus alis cicatricibus 0.4 mm. longis reductis.

Culm slender, branching, straggling, more than 50 cm. long, glabrous or with a few long hairs; sheaths about as long as the internodes, glabrous, with a line of short hairs on the collar; blades 5-8 cm. long, 5-8 mm. wide, abruptly narrowed at the base to a short petiole-like base, minutely scabrous on the margins, otherwise glabrous; inflorescence 3-6.5 cm. long with several short densely flowered branches floriferous to the base; spikelets 3 mm. long, short-pedicellate; first glume acute, 3-nerved, nearly as long as the spikelet, with a few hairs at the tip; second glume and sterile lemma equal,

strongly 5-nerved, with a tuft of hairs at the tip of the second glume, the sterile lemma glabrous or nearly so; fruit 2.5 mm. long, with scars (minute wings) 0.4 mm. long.

Type in the U. S. National Herbarium, No. 975269, collected on the Campos de Bocaina, São Paulo, Brazil, April 12, 1894, by Löfgren and Edwall (No. 2403). This species was collected in the same general locality by A. C. Brade, April 2, 1951 (No. 20841).

ICHNANTHUS BACULARIUS Swallen, sp. nov.

Culmi graciles, radicati, 1 m. longi vel longiores, internodiis pilosis; vaginae internodiis multo breviores, glabrae, marginibus ciliatis; ligula erosa vel ciliata, 1-2 mm. longa; laminae 7-11 cm. longae, 10-15 mm. latae, marginibus valde scabrae; panícula 15 cm. longa, ramis adscendentibus vel patentibus usque ad 9 cm. longis; spiculae 5-5.4 mm. longae, glabrae, appressae; fructus 2.7 mm. longus alis cicatricibus 0.5 mm. longis reductis.

Perennial?; culms slender, tangled, leaning on other vegetation, over 1 m. long, with long stilt-roots from the lower nodes, the internodes pilose; sheaths much shorter than the internodes, glabrous across the back, with ciliate margins and a densely pubescent collar; ligule an erose or ciliate membrane 1-2 mm. long; blades 7-11 cm. long, 10-15 mm. wide, acuminate, scabrous on the nerves on the upper surface, smooth on the under surface, the margins very scabrous; panicles terminal and axillary, up to 15 cm. long, with more or less flexuous, ascending to spreading branches as much as 9 cm. long; spikelets 5-5.4 mm. long, appressed, glabrous or very sparsely pilose; second glume and sterile lemma subequal, or the glume a little longer, acute or acuminate, 5-nerved, scabrous toward the tip; fruit 2.7 mm. long, the wings reduced to scars, about 0.5 mm. long.

Type in the U. S. National Herbarium, No. 1500985, collected in tangled colony, rain forest, southeast slope of Serra do Caparão, Esperito Santo, Brazil, November 23, 1929, by Agnes Chase (No. 10079). Also collected on Serra do Caparão by Inez Mexia (No. 4011).